

**PICK2: Planets In Clusters with K2**

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We propose to obtain high precision K2 photometry of the members of four open stellar clusters to be observed fields 4 and 5 in order to search for young, newly formed planets. Open clusters provide a homogeneous sample of stars in which the major independent variable is the stellar mass. The different ages of the clusters will help us to understand the early dynamical evolution of planetary systems. We have assembled a large, diverse and highly experienced international team. We will search the light curves for planetary transit signatures. We will conduct extensive followup observations including ground-based photometry, high precision RV measurement, and high resolution optical and near-IR spectroscopy in order to confirm the planetary candidates. We will perform detailed spectral analysis in order to derive stellar parameters and chemical abundances, and will perform Doppler tomographic analysis of rapidly rotating planetary candidates. These results will provide important new constraints on the physics of planetary system formation and early dynamical evolution. We will address the Kepler mission goals of obtaining an inventory of the diversity of planetary systems around sun-like stars. We will also obtain data very complementary to the goals of the TESS program, and help guide planetary system science for JWST studies.